HOOGSTRAALIA TURDELLA, A NEW GENUS AND SPECIES OF FLEA FROM THE PHILIPPINES[1]

(SIPHONAPTERA, PYGIOPSYLLIDAE, PYGIOPSYLLINAE)

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Among the fleas collected by Mr. Harry Hoogstraal, when leader of the Chicago Natural History Museum Expedition to the Philippines in 1946-1947, is a remarkable new genus, which exhibits some very interesting modifications. Although it has no known close relatives, this new genus, described below, has definite affinities with the New Guinea fauna.

Hoogstraalia, new genus

Genotype: *Hoogstraalia turdella*, new species.

Diagnosis.—One of the very few genera of fleas in which both a genal comb and a well-developed eye are present. The only genus in the family known to possess a genal comb. The only Pygiopsyllid with a sinus on upper margin of propleuron for reception of end of first vinculum. Resembling some *Acanthopsylla* in that the distal arm of the male ninth sternum is bifid. *Description.*—Frontal tubercle absent. Genal comb large, extending from base of maxilla to eye. Labial palpi five-segmented, not extending to trochanters. Eye diameter greater than thrice width of any genal spine. Antenna symmetrical; with bristles of second segment much shorter than club. Integrecipitate. Postantennal region with three rows of bristles. Pronotal comb well-developed. Most dorsolateral tibial bristles paired. All four vincula present. Some of first abdominal terga with apical spinelets. Typical abdominal terga with three fairly complete rows of bristles. Male with two antepygidial bristles. Sensilium markedly convex. Male ninth sternum with proximal arm very long; distal arm bifid; with spiniforms. Manubrium narrow. Exopodite extremely broad as well as long; with apical spiniforms. Male eighth tergum reduced; eighth sternum very well developed, enclosing most of genitalia. The third apodemal rod arising from base of aedeagus. True crochets apparently absent. Penis rods not coiled.

The female of this genus is unknown.

Hoogstraalia turdella, new species

Holotype.—Male ex *Turdus poliocephalus kelleri*, collected by Harry Hoogstraal and Floyd Werner, 1 November 1946. Philippine Islands: Mindanao, Davao Province, East Slope of Mount McKinley, elev. 7800 ft. Deposited in Chicago Natural History Museum.

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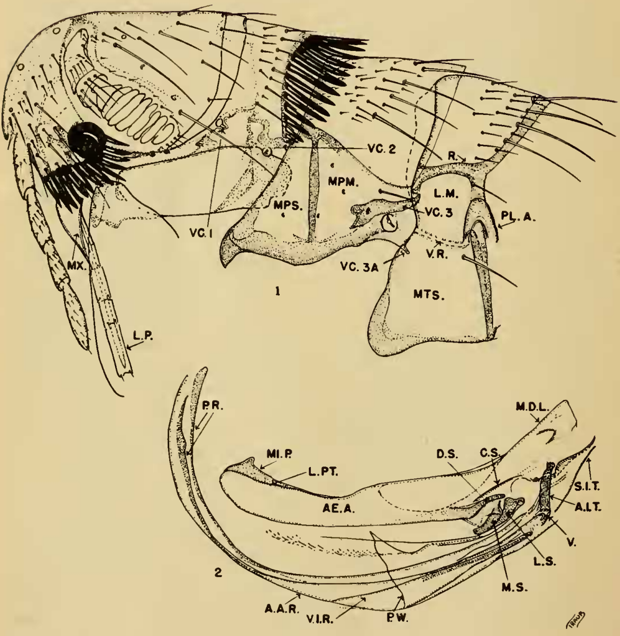

PLATE 22. HOOGSTRAALIA TURDELLA

Fig. 1, head and part of thorax; fig. 2, aedeagus.

Description. Male, Head (fig. 1). Frontoclypeal margin evenly rounded. Pores of microsetae scattered anterior and dorsal to first row of bristles. Preantennal region with an anterior row of about seven bristles, the longest near the insertion of the maxillary palpi; with about 4 more long bristles and 12 short ones not arranged in definite rows. Genal comb consisting of about 13 spines on a side. Eye much less excised ventrally than in other Pygiopsyllids, almost rounded; eye covering bases of four most dorsal genal spines. Genal process at level of second genal spine but slightly wider and extending beyond apex of spine. Maxillary lobe (*MX.*)[2] extending to about level of second segment of labial palpi (*L.P.*) which in turn extend almost to apex of forecoxae. Bristles of second antennal segment not reaching beyond basal third of club. A row of very small bristles along dorsal and caudal margin of antennal fossa. Postantennal region with three rows of bristles arranged 3-5-6, but apparently with two additional bristles near antennal groove; second bristle in posterior row much smaller than others.

Thorax. With two rows of bristles preceding the fourteen or fifteen pronotal ctenidial spines on each side. Mesonotum with three rows of bristles, not counting bristles forming one or two rows near cephalic margin; the caudal row consisting of by far the longest bristles. Mesepisternum (*MPS.*) apparently with but one bristle, and that median. Mesepimere (*MPM.*) apparently with five bristles. Metanotum with three rows of bristles. Lateral metanotal area (*L.M.*) distinct, with dorsal ridge (*R.*) well sclerotized, but with ventral ridge (*V.R.*) feeble; with a bristle at dorsocaudal angle. Pleural arch (*PL.A.*) at junction of metanotal ridge and pleural ridge strongly convex, well-developed. Metepisternum (*MTS.*) with one bristle, near dorsocaudal angle; with an accessory link or vinculum (*VC.3A*) near anterodorsal angle. Metepimere (fig. 10, *MTM.*) with eleven bristles arranged 5-4-2.

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[2] Abbreviations are as follows: *A.A.R.*, aedeagal apodemal rod; *A.B.*, antepygidial bristle; *AE.A.*, aedeagal apodeme; *A.I.T.*, armature of inner tube of aedeagus; *B.CL.*, base of clasper; *C.S.*, crescent sclerite; *D.A.9*, distal arm of 9th sternum; *D.S.*, dorsal convex lobe of apodemal strut; *F.*, exopodite of movable finger; *L.M.*, lateral metanotal area; *L.P.*, labial palpi; *L.PT.*, lateral plates of aedaegal apodeme; *L.S.*, lateral lobe of apodemal strut; *MB.*, manubrium; *M.D.L.*, median dorsal lobe; *MI.P.*, middle plate of aedeagal apodeme; *MPM.*, mesepimere; *MPS.*, mesepisternum; *M.S.*, mesal lobe of apodemal strut; *MTM.*, metepimere; *MTS.*, metepisternum; *MX.*, maxillary lobe; *P.A.9*, proximal arm of 9th sternum; *PL.A.*, pleural arch of metathorax; *P.R.*, penis rods; *P.W.*, wall of aedeagal pouch; P^1, process 1 of clasper; P^2, process 2 of clasper; *R.*, dorsal ridge of lateral metanotal area; *S.I.T.*, sclerotized inner tube; *SN.*, sensilium; *T.AP.9*, tergal apodeme of 9th tergum; *V.*, vesicle; *VC.1.*, first vinculum; *VC.2.*, second vinculum; *VC.3.*, third vinculum; *VC.3A.*, accessory link below third vinculum; *VC.4.*, fourth vinculum; *V.I.R.*, ventral intramural rod; *V.R.*, ventral ridge of lateral metanotal area; *8PR.*, process of 8th sternum; *2S.*, second abdominal sternum; *8S.*, eighth sternum; *1T.*, first tergum; *2T.*, second tergum; *8T.*, eighth tergum; *9T.*, ninth tergum.

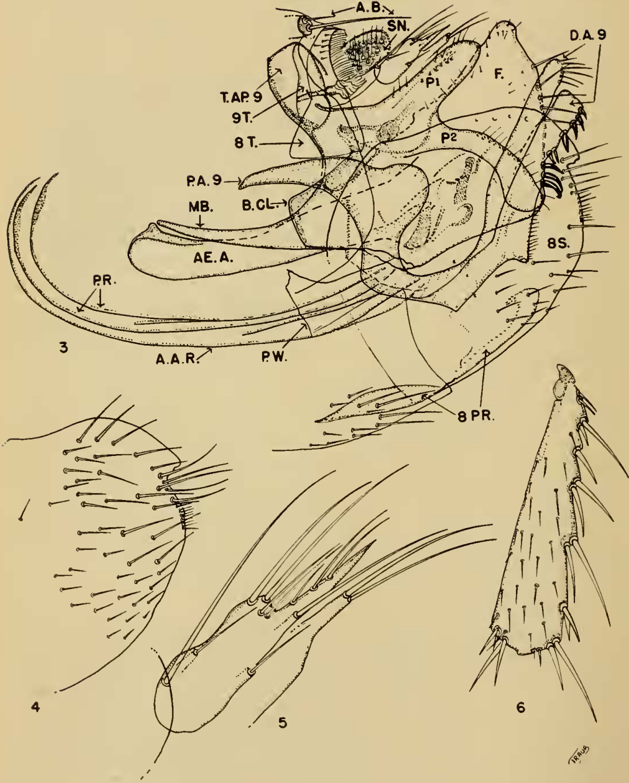

Plate 23. Hoogstraalia turdella

Fig. 3, modified abdominal segments; fig. 4, eighth sternum; fig. 5, dorsal and ventral anal lobes; fig. 6, male hind tibia.

Legs. Metacoxa with a patch of mesal thin, short bristles near anteroventral angle, and with three (one very small) lateral bristles immediately above and behind insertion of trochanter. Profemur with a ventral marginal bristle at proximal fourth; a smaller one nearer apex. Mesofemur with a ventral submarginal row of about 5 small bristles and a larger one near apex. Metafemur with 9 ventromarginal bristles, the longest near each end. Metatibia (fig. 6) with but one unpaired dorsolateral large bristle and with six pairs of such bristles; with about 22 small lateral bristles. Measurements of tibiae and segments of tarsi (petiolate base deleted) shown in microns:

Leg	Tibia	Tarsal Segment				
		1	2	3	4	5
Pro-	165	63	63	47	33	68
Meso-	248	116	83	49	28	65
Meta-	393	187	143	89	54	88

None of tarsal bristles reaching beyond apex of following segment. Fifth segment of protarsus with seven pairs of plantar bristles; the proximal three pairs directed more towards the mid-line than the others; the fifth and sixth pairs inserted at same level, overlapping; with four subapical submesal stout bristles. Fifth segment of mesotarsus (fig. 8) similar or with but six pairs of lateral plantar bristles; fifth segment of metatarsus (fig. 9) similar but with only six pairs of lateral plantar bristles and with two or three long, thin apical bristles.

Abdomen. First tergum (fig. 10, *1T.*) with four rows of bristles, the first incomplete; the bristles in the last row the longest. With two very small apical teeth on each side of second tergum; third and fourth terga with one. Basal sternum with one ventromarginal bristle. Typical terga with three or four rows of bristles, the first row incomplete; larger bristles of the caudal row the longest; the most ventral bristle of caudal row inserted below spiracle. Sterna three to six with ventromarginal bristles arranged in two or three very short rows; with three long bristles in caudal row. With upper antepygidial bristle (fig. 3, *A.B.*) less than half the length of lower bristle.

Modified Abdominal Segments (fig. 3). Eighth tergum (*8T.*) reduced, limited to a small plate bordering its spiracle; with but a few very small bristles near the antepygidial bristles. Eighth sternum (*8S.* and fig. 4) very large, extending as far dorsad as near apex of distal arm of ninth sternum; dorsal margin slightly sinuate; caudal margin with a subdorsal sinus; with about 48 bristles, and in addition a fringe of ten or twelve very small bristles along caudal margin. Eighth sternum associated with a peculiar long, somewhat ellipsoid structure (*8PR.*) near ventral margin, and extending into seventh sternum; a somewhat membranous, slightly filamentous and spiculose process extending caudad from the ellipsoid; an element of the process connecting with the base of the distal arm of the ninth sternum. The connection with the ninth

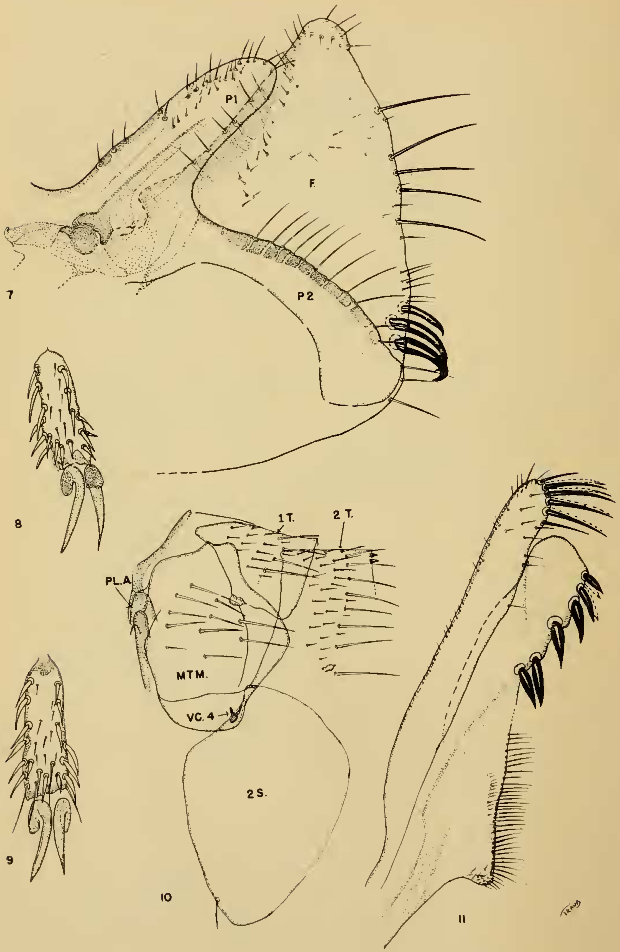

Plate 24. Hoogstraalia turdella

Fig. 7, process of clasper and exopodite; fig. 8, mesotarsus V; fig. 9, metatarsus V; fig. 10, part of metathorax and part of abdomen; fig. 11, distal arm of ninth sternum.

sternum suggests that the structure is homologous with intersegmental processes arising from the membrane between the eighth and ninth segments of certain other fleas.

Immovable process of clasper very large, divided into two processes (P_1 and P_2 and fig. 7). The first process (P_1) digitoid; about three times as long as broad as measured along cephalic margin and apex. Process P_2 at right angles to P_1 and extending ventrad to ventrocaudal margin of exopodite; lightly sclerotized; dorsal and ventral margin convex; with a row of bristles along apparent caudal (morphologically dorsal) margin. Exopodite (*F.* and fig. 7) extremely large, extending distad of P_1, ventrad to near base of distal arm of ninth sternum, then cephalad in an almost straight but slightly sclerotized line to base of proximal arm of ninth sternum and then curving dorsad to the truncate base of clasper (*B.CL.*), which is broader than the manubrium. Dorsal margin and apex of exopodite with thin short bristles. Caudal margin of exopodite with five long thin bristles and with three stout curved spiniforms at ventrocaudal margin. Manubrium (*MB.*) narrow, at midpoint only about one-third width of tergal apodeme of ninth tergum (*T.AP.9*), which forms dorsoproximal portion of clasper lobe; slightly curved; apex subacuminate; ninth tergum (*9T.*) very narrow, reduced on each side to a pyriform sclerite between its apodeme and clasper lobe. Proximal arm of ninth sternum (*P.A.9*) greatly expanded apically; shaped like an inverted boot with a low rounded heel and an elongate toe. Distal arm of ninth sternum (*D.A.9* and fig. 11) bifid to near base, forming anterior and posterior appendages. Anterior appendage of distal arm long and narrow, with six apical or subapical stout long bristles on caudal margin; with three thin bristles well proximad of these; with a row of short thin bristles on cephalic margin. Posterior appendage of distal arm shorter and broader than anterior, with a row of six spiniforms extending to apex of caudal margin and with a fringe of about 36 short thin bristles on proximal half of this margin; with a row of 16 smaller mesal submarginal ones and a patch of 8 still smaller mesal ones near ventrocaudal angle.

Aedeagal apodeme (fig. 2, *AE.A.*) slightly shorter than aedeagus proper; middle plate (*MI.P.*) apparent at anterior end as a sclerotized cap-like structure. Apical appendage and proximal spur absent. Median dorsal lobe (*M.D.L.*) relatively weakly sclerotized; truncate apically; lacking distinct apical or subapical sclerites but apparently with a subapical V-shaped sclerotization. Lateral lobes and crochets apparently absent. Armature of inner tube (*A.I.T.*) well represented as a long narrow rod dorsad of vesicle (*V.*). Sclerotized inner tube (*S.I.T.*) dorsally markedly sinuate; ventral margin slightly so. Apodemal strut supporting inner tube consisting on each side of a dorsal convex lobe (*D.S.*), a narrow submedian mesal lobe (*M.S.*), and a larger apically-flared lateral lobe (*L.S.*). The relatively flat crescent sclerite (*C.S.*) immediately dorsad of apodemal strut. Base of wall of aedeagal pouch (*P.W.*) distinct. Penis rods (*P.R.*) when *in situ* extending cephalad only slightly more than aedaegal apodeme; without an indication of a coil. The third aedeagal apodemal rod (*A.A.R.*) similar in length to penis rods. Ventral intramural rod (*V.I.R.*) arising from vesicle (*V.*).

Tenth abdominal segment conspicuous because of highly convex sensilium (*SN.*) which is higher than long; with a long bristle at insertion of dorsal lobe of proctiger (fig. 5) which is biconvex dorsally and bears bristles as in figure; apically acuminate. Ventral lobe of proctiger with two apical bristles.

Remarks. Birds are parasitized by several widely separated genera of fleas, representing several families. In those forms that have pronotal combs, the number of spines in the comb is characteristically definitely greater than in near relatives, which usually parasitize rodents. No close relative of *Hoogstraalia* is yet known. In *Acanthopsylla*, an Australian and New Guinea genus with which this new genus has affinities, a total of about 20 spines is common. The comb of 29 or 30 spines suggests that *Hoogstraalia* is a true bird flea, and that *Turdus* may be a characteristic host.

Also worthy of note is that this one bird was host to *Dasypsyllus gallinulae*, a species heretofore known only from Europe and North America!

I take great pleasure in naming this genus for Mr. Harry Hoogstraal, who has, through his various expeditions and his constant zeal, contributed immensely to our knowledge of ectoparasites.

WESTWARD EXTENSION OF THE RANGE OF HAEMAGOGUS SPEGAZZINII FALCO KUMM ET AL. INTO COSTA RICA

(DIPTERA, CULICIDAE)[1,2,3]

By PEDRO GALINDO[4], STANLEY J. CARPENTER[5], AND HAROLD TRAPIDO[4]

During the past two years the writers have been engaged in a study of the forest mosquito population of the Isthmus of Panama following an outbreak of sylvan yellow fever in this area at the end of 1948. The first studies were initiated in the Canal Zone and portions of the Republic of Panama adjacent

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[1] Studies on The Forest Mosquitoes of Panama. V.

[2] The authors wish to express their appreciation to the authorities who have made it possible for them to engage in this work; Dr. Herbert C. Clark, Director of the Gorgas Memorial Laboratory, Col. Francis P. Kintz, M. C., Surgeon of the U. S. Army Caribbean, and Dr. Edward I. Salisbury, Medical Director of the United Fruit Company.

[3] Publication costs paid by Gorgas Memorial Institute.

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